AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (original) A permanent magnet in which the magnetization direction varies in three dimensions with location to optimize a desired magnetic field property in a selected direction at a selected point.

2. (original) The permanent magnet in accordance with claim 1 wherein the desired magnetic field property is selected from transverse magnetic field, axial magnetic field, axial gradient of the transverse magnetic field, transverse gradient of the transverse magnetic field, axis gradient of the axial magnetic field, transverse gradient of the axial magnetic field, the product of the transverse magnetic field and the transverse gradient of the transverse magnetic field, the product of the transverse magnetic field and the axial gradient of the transverse magnetic field, the product of the axial magnetic field and the transverse gradient of the axial magnetic field, or the product of the axial magnetic field and the axial gradient of the axial magnetic field.

3. (cancelled)

4. (cancelled)

5. (previously presented) A permanent magnet in which the magnetization direction varies in two dimensions with location to optimize a desired magnetic field property in a selected direction at a selected point.

6. (original) The permanent magnet in accordance with claim 5 wherein the desired magnetic field property is selected from transverse magnetic field, axial magnetic field, axial gradient of the transverse magnetic field, transverse gradient of the transverse magnetic field, axis gradient of the axial magnetic field, transverse gradient of the axial magnetic field, the product of the transverse magnetic field and the transverse gradient of the transverse magnetic field, the product of the transverse magnetic field and the axial gradient of the transverse magnetic field, the product of the axial magnetic field and the transverse gradient of the axial magnetic field, or the product of the axial magnetic field and the axial gradient of the axial magnetic field.

7. (cancelled)

8. (cancelled)

9. (original) A method of performing a medical procedure using the magnet of claim 1 to project magnetic field into a patient to control a magnetic medical element inside the patient.

10. (previously presented) A method of performing a medical procedure using the magnet of claim 5 to project a magnetic field into a patient to control a magnetic medical element inside the patient.

11-30 (cancelled)

31. (previously presented) A permanent magnet in which the magnetization direction varies with location to optimize the magnetic field at a selected point in a selected direction, the magnetization direction varying in three dimensions so that the magnetization at each location in the magnet is in the direction that substantially optimizes the desired magnetic field property at a selected point in the selected direction.

32. (previously presented) A permanent magnet in which the magnetization direction varies with location to optimize the magnetic field at a selected point in a selected direction, the magnetization direction varying in two dimensions so that the magnetization at each location in the magnet is in the direction that substantially optimizes the desired magnetic field property at a selected point in the selected direction.

33. (previously presented) A permanent magnet in which the magnetization direction varies with location to optimize the magnetic field at a selected point in a selected direction, the magnet comprising a plurality of permanent magnet segments, the magnetization direction of each permanent magnet segment varying in three dimensions so that the magnetization direction of each permanent magnet segment is in the direction that substantially optimizes the magnetic field at the selected point in the selected direction.

34. (currently Amended) The permanent magnet according to claim [[34]] 33 wherein at least a portion of the surface of the magnet conforms to a surface of constant contribution to the desired magnetic field at the selected location point.

35. (previously presented) The permanent magnet according to claim 34 wherein the direction of magnetization throughout each permanent magnet segment is constant.

36. (previously presented) The permanent magnet according to claim 35 wherein the direction of magnetization throughout each permanent magnet segment is the direction which, at the center of mass of the segment, provides the maximum contribution to the desired property optimizing the field.

37. (previously presented) The permanent magnet according to claim 35 wherein the direction of magnetization throughout each permanent magnet segment is the direction which, at the effective magnet center, provides the maximum contribution to the desired property optimizing the field.

38. (previously presented) The permanent magnet according to claim 35 wherein the size and position of the permanent magnet segments is selected so that the difference in the direction of magnetization direction between adjacent magnet segments is less than about 45º.

39. (previously presented) The permanent magnet according to claim 38 wherein the size and position of the permanent magnet segments is selected so that the difference in the direction of magnetization direction between adjacent magnet segments is less than about 30º.

40. (currently Amended) The permanent magnet according to claim [[35]] 34 wherein the magnetization direction throughout each permanent magnet segment is not constant.

41. (previously presented) A permanent magnet in which the magnetization direction varies with location to optimize a the magnetic field at a selected point in a selected direction, the magnet comprising: a plurality of permanent magnet segments, the magnetization direction of each permanent magnet segment varying in two dimensions so that the magnetization direction of each permanent magnet segment is in the direction that substantially optimizes the magnetic field at the selected point in the selected direction.

42. (previously presented) The permanent magnet according to claim 41 wherein at least a portion of the surface of the magnet conforms to a surface of constant contribution to the desired magnetic field at the selected location point.

43. (previously presented) The permanent magnet according to claim 41 wherein the direction of magnetization throughout each permanent magnet segment is constant.

44. (previously presented) The permanent magnet according to claim 43 wherein the direction of magnetization throughout each permanent magnet segment is the direction which, at the center of mass of the segment, provides the maximum contribution to the desired property optimizing the field.

45. (previously presented) The permanent magnet according to claim 43 wherein the direction of magnetization throughout each permanent magnet segment is the direction which, at the effective magnet center, provides the maximum contribution to the desired property optimizing the field.

46. (previously presented) The permanent magnet according to claim 43 wherein the size and position of the permanent magnet segments is selected so that the difference in the direction of magnetization direction between adjacent magnet segments is less than about 45º.

47. (previously presented) The permanent magnet according to claim 46 wherein the size and position of the permanent magnet segments is selected so that the difference in the direction of magnetization direction between adjacent magnet segments is less than about 30º.

48. (currently Amended) The permanent magnet according to claim [[43]] 41 wherein the magnetization direction throughout each permanent magnet segment is not constant.

49. (previously presented) A permanent magnet in which the magnetization direction varies to control the magnetic field produced by the magnet at a selected point, the magnet having a front face, and a back face substantially conforming to a surface of equal contribution.

50. (previously presented) The permanent magnet according to claim 49 wherein the magnetic material is monolithic with a continuously variable varying magnetization direction.

51. (previously presented) The permanent magnet according to claim 49 wherein the magnetic material comprises a plurality of discrete magnet segments, with the magnetization direction of each segment having a constant magnetization direction.